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Nerys Purchon's Handbooks on Soap Natch
Natural skin care recipes

Details for currently available books from Nerys Purchon can be found at our our bibliography page

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Aloe balm/massage cream recipe

The following is good as a massage cream but is also great for soothing sunburn, minor burns etc. and people with super dry skin like it as a moisturiser.

You can choose essential oils that are suitable for whatever you are using it for. If it's for a face cream use 1% as below but if it for therapeutic use such as backache you can increase the percentage to 3%. Olive oil can be used instead of comfrey oil and can be increased to 3% to give more 'slip'.

Remeber that if you increase or decrease the percentages you have to adjust the whole recipe accordingly :-)

Ingredients	Quantity	Percentage
Emulsifying wax	30 gm	9.52
Stearic acid	6 gm	1.90
Infused comfrey oil	24 ml	2.10
Aloe juice or herbal infusion	225 ml	71.81
Glycerine	24 ml	7.66
Grapefruit seed extract	3 ml	1.00
Essential oil	3 ml	1.00

Method

1. Heat the wax, stearic acid and oil together to 65°C.
2. Heat the juice or infusion, glycerine and GSE together to 70°C.
3. Pour the water phase onto the oil phase (MOST important).
4. Stir in a figure of 8 until the temperature reached 40-45°C
5. Drip in the essential oil and continue stirring until completely mixed.
6. Pour into jars.

Skin May lotion recipe

If you want a simple lotion and don't mind it being a little greasy you might find the following recipe to be perfect for your needs. It's a water in oil formula and is very easy to make (same as making mayonnaise). I often use this on my skin if I'm spending a day in the garden where the wind will dry my skin. I also use it as a pre-shampoo conditioner on my rather dry hair.

The infused oil can be made with herbs that address particular problems. See my Natural skin care chart for suggestions on which herbs to use for each skin type.

Skin Mayo is a simple, wholesome moisturiser that is nourishing for all skins. It is suitable for men, women and children. Children's skin needs protection as much as that of adults if the climate is harsh, but this protection needs to be very light and non-clogging to those fine pores.

This is basically a mayonnaise, although the taste isn't as good as the action! It moisturises, feeds, balances and leaves your skin soft. As well as a moisturiser, you can use it as a pre-shampoo treatment, bath oil, after-shower skin oil or hand cream. For really chapped hands, you can massage it in gently while you listen to music or watch television. Store in the refrigerator, where it will keep for several weeks. You can use 1 per cent grapefruit seed extract if you want to store it for longer.

Ingredients

- 1 egg yolk or 1 whole egg if you have oily skin
- 1/2 teaspoon Herb Vinegar or white wine vinegar
- 1 cup (250ml/8fl-oz) (this is approximate, it depends how thick you want it) infused oil or sweet almond oil.
- 1 tablespoon plain yoghurt
- 30 drops essential oil (your choice but definitely not fragrance oil!)

Method

- Beat the egg yolks and vinegar in a blender until well mixed.
- Add the oil slowly in a thin trickle until the mixture is very thick.
- Mix in the remaining ingredients very well.

Blessings,
Ravenna (Nerys Purchon)

- Back to Nerys Purchon's Handbooks index

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This page was last updated on 4th August 2002

L18 ANSWER 2 OF 92 CAPLUS COPYRIGHT 2003 ACS

AB A dried powd. food product contg. a fatty constituent, e.g. hydrogenated cottonseed **oil**, is melted and emulsified in a warm dispersion of a proteinaceous material, e.g. nonfat milk solids, whey solids, H2O-sol. soybean protein derivs., or **whole eggs**, in a mixed partial ester. The partial ester is prepd. by reaction of 47.8% stearic acid and 52% **propylene glycol** in the presence of 0.02% SnCl2. The mixture is heated to approx. 79.4.degree., held at this temp. for 5-6 hrs., and dried. It is used in prepg. cake mixes, ice **cream** mixes, mayonnaise, and cake toppings and in milk shakes.

PI US 2913342 **19591117**

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
US 2913342		19591117	US		<--

AB A dried powd. food product contg. a fatty constituent, e.g. hydrogenated cottonseed **oil**, is melted and emulsified in a warm dispersion of a proteinaceous material, e.g. nonfat milk solids, whey solids, H2O-sol. soybean protein derivs., or **whole eggs**, in a mixed partial ester. The partial ester is prepd. by reaction of 47.8% stearic acid and 52% **propylene glycol** in the presence of 0.02% SnCl2. The mixture is heated to approx. 79.4.degree., held at this temp. for 5-6 hrs., and dried. It is used in prepg. cake mixes, ice **cream** mixes, mayonnaise, and cake toppings and in milk shakes.

IT Cottonseed **oil**
(hydrogenated, powd. food compns. contg.)

IT Bakery products or Baked goods
Ice **cream**
Mayonnaise
Milk preparations
(powd. fat compn. for)

US 5635609
4/59952

18 ANSWER 30 OF 92 USPATFULL
PI US 5360627 19941101 <--
AB . . . is disclosed to contain from about 10% to about 40% of a fat phase containing a triglyceride and emulsifier containing **propylene glycol** monoester of fats and fatty acids; from about 60% to about 90% of an aqueous phase containing 5% to about 30% of a viscosifier and 10% to 50% of a polyol **humectant**. The viscosifier may include a starch, a starch derivative, or a gum. This plastic emulsion is used to make a. . .
SUMM . . . triglycerides having widely different melting points. Fat crystals in a shortening are held together by internal cohesive forces and liquid **oil** is enmeshed in the structure. Shortenings are used in cakes to impart tenderness, texture, and crumb and promote increase in. . . doughs to achieve the required volume of the baked products. Emulsifiers, such as lecithin, mono- and diglycerides of fatty acids, **propylene glycol** mono- and diesters of fatty acids, diacetyl tartaric acid esters of mono- and diglycerides of fatty acids may be used. . .
SUMM U.S. Pat. No. 4,818,553 (Holsher et al.) discloses a method of preparing bakery products which involves combining a water-in-**oil** emulsion to serve as a shortening and at least one further component selected from flour, eggs, leavening agents, sugar, and. . . these materials. The emulsion contains 15-70% fat phase and 5-60% by weight, based on the total emulsion, of a water-dissolved **humectant**. The **humectant** is selected from the group consisting of glucose, fructose, mannose, galactose, talose, lactose, sucrose, maltose, maltodextrins, polydextrose, glycerol, sorbitol, **propylene glycol**, and mixtures thereof. The fat phase may optionally include an emulsifier, such as mono- and diglyceride mixture, or mixtures of. . . emulsions cannot be used satisfactorily in traditional cake preparation involving first aerating the emulsion with sugar to produce an aerated **cream** which is subsequently mixed with eggs and flour to produce the batter." Examples of the Holscher patent describe water-in-**oil** emulsions containing at least 40% fat. Unfortunately, at particularly low fat levels, i.e. at fat levels below about 40%, preparation of water-in-**oil** emulsion becomes difficult: any minor fluctuation in processing, e.g. cooling, can change the emulsion to **oil**-in-water. Therefore, an **oil**-in-water rather than a water-in-**oil** emulsion is desirable which could be used as a low fat replacement for shorthening.
SUMM It is another object of the invention to provide a reduced fat **oil**-in-water emulsion which can be used as a shortening replacement.
SUMM . . . by weight of the emulsion, of an emulsifier, the emulsifier comprising at least 45%, by weight of the emulsifier, of **propylene glycol** monoester of fats and fatty acids; and
SUMM (d) from about 10% to about 50% of a polyol **humectant**.
SUMM . . . have a plastic consistency over a fairly wide range of temperatures and contain a large amount (e.g., up to 40%) **oils** liquid at 10.degree. C. (substantially free from crystallized fat at said temperature), the remainder consisting of fats melting within a.

SUMM
1. Hydrogenated whale **oil**, having a

melting point ranging from 44 to 46.degree. C.
Hydrogenated whale **oil**, having a
30%
melting point of 34.degree. C.
Coconut **oil**, having a melting point
20%
of 24.degree. C.
Soybean **oil** 20%

2. Premier jus, having a melting point
25%
of 46.degree. C.
Coconut **oil**, having a melting point
of 24.degree. C.
Soybean **oil** 40%

3. Hydrogenated palm **oil**, having a melting
25%
point of 42.degree. C.
Palm oil, having a melting point of 42.degree. C.
30%
Hydrogenated groundnut **oil**, having a
20%
melting point of 34.degree. C.
Soybean **oil** 25%

4. Hydrogenated groundnut **oil**, having a
25%
melting point of 42.degree. C.
Lard, having a melting point of 38.degree. C.
20%
Oleomargarine, having a melting point
35%
of 30.degree. C.
Soybean **oil** 20%

5. Hydrogenated groundnut **oil**, having a
70%
melting point of 34.degree. C.
Coconut **oil**, having a melting point
10%
of 34.degree. C.
Soybean **oil** 20%

6. Hydrogenated groundnut **oil**, having a
30%
melting point of 42.degree. C.
Coconut **oil**, having a melting point
20%
of 24.degree. C.
Palmkernel **oil**, having a melting point
20%
of 28.degree. C.
Soybean **oil** 30%

SUMM The preferred triglycerides are hydrogenated and/or unhydrogenated vegetable **oils**, such as corn **oil**, peanut **oil**, coconut **oil**, palm kernel **oil**, palm **oil**, rapeseed **oil**, **sunflower oil**, **safflower oil**, and soybean **oil**, and mixtures thereof.

SUMM Creamtex is a partially hydrogenated vegetable **oil** (soybean, cottonseed), having about 88-92% hydrogenated soybean **oil**, a Wiley Melting Point of 111.degree.-119.degree. F., and an SFI 33 maximum

at 50.degree. F., 22 maximum at 70.degree. F.,. . .

SUMM Code 321.RTM. is a partially hydrogenated soybean **oil**, having a Wiley Melting point 95.degree.-99.degree. F., and an SFI 34-43 at 50.degree. F. and 3-8 at 92.degree. F.

SUMM Durola Select.RTM. is a partially hydrogenated canola **oil**, having an SFI of 52 min at 50.degree. F., 34 min at 70.degree. F. 25 min at 80.degree. F., 10. . .

SUMM Diamond D-42.RTM. is a partially hydrogenated vegetable **oil** (cottonseed **oil** and soybean **oil**), having a Wiley melting point 110.degree.-119.degree. F. and an SFI of 40-47 at 50.degree. F., 26-33 at 70.degree. F. 13-19. . .

SUMM Diamond D-40.RTM. is a partially hydrogenated vegetable **oil**, having a Wiley Melting Point of 112-117.degree. F., having a solid fat index of 24-30 at 50.degree. F., 13-19 at. . .

SUMM . . . the shortening substitute according to the invention is an emulsifier. The emulsifier suitable for use in the present invention contains **propylene glycol** monoester of fats and fatty acids, typically in the amount of at least 45%, preferably in the amount of from. . .

SUMM Additional emulsifiers, besides **propylene glycol** monoester, may be included in the fat phase of the shortening substitute of the invention. Typically, the emulsifier will also contain a minor amount of **propylene glycol** diester of fats and fatty acids. Preferably, the emulsifier included in the shortening substitute of the invention contains, mono- and diglycerides and lecithin in addition to **propylene glycol** mono- and diesters of fats and fatty acids. The preferred emulsifier included in the shortening substitute of the invention is. . . Bergh Foods Corporation under trademark EC-25.RTM.. EC-25.RTM. has a capillary melting point of 90.degree.-100.degree. F., and is a mixture of **propylene glycol** mono- and diesters of fats and fatty acids, mono- and diglycerides, lecithin and triglyceride. Examples of other emulsifiers which may. . .

SUMM The aqueous phase of the shortening substitute of the invention includes a viscosifier and a **humectant**, as necessary ingredients.

SUMM . . . may be employed in the present invention are exemplified but not limited to guar gum, locust bean gum, sodium alginate, **propylene glycol** alginate, xanthan gum, cellulose gum, and mixtures thereof.

SUMM . . . the viscosifier is a low-dextrose equivalent maltodextrin manufactured by the enzymatic conversion of potato starch (Paselli SA2.RTM.), a tapioca dextrin (N-**oil**.RTM.), and pregelatinized tapioca dextrin (N-**oil** Instant.RTM.). Optimum results were obtained with pregelatinized tapioca dextrin.

SUMM The second essential ingredient in the aqueous phase of the shortening substitute of the invention is a **humectant**. Generally speaking, a **humectant** is a substance which depresses the water activity of the aqueous phase. The **humectant** will generally effect the decrease in water activity to a value below 0.96, and preferably ranging from 0.70-0.90.

SUMM **Humectants** suitable for use in the present invention are described in the commonly assigned U.S. Pat. No. 4,818,553, which is incorporated by reference herein. Suitable **humectants** include but are not limited to glucose, fructose, mannose, galactose, talose, lactose, sucrose, maltose, maltodextrins, polydextrose, glycerol, sorbitol, **propylene glycol**. Increased specific volume and the best cake texture were obtained when hydrolyzed product

of starches was used, e.g. hydrolyzed corn starch such as high fructose corn syrup. High fructose corn syrup is the most preferred **humectant** according to the present invention. Shortening substitues of the present invention which contained a mixture of EC-25.RTM. emulsifier and HFCS. . .

SUMM The shortening substitute of the present invention may be in the form of a water-in-**oil** or **oil**-in-water emulsion. According to the present invention, **oil**-in-water emulsions are preferred in order to improve the quality cake, while also easing the manufacture of the shortening substitute. It. . . resulted in a cake that was more moist (and stayed moist, even after one day) compared to cakes prepared with **oil**-continuous emulsion.

SUMM . . . according to the present invention are prepared according to margarine manufacturing methods. Generally, the triglyceride, the emulsifier, and any other **oil**-soluble ingredients are heated and mixed to obtain an **oil** phase. A viscosifier, a **humectant**, and other water-soluble ingredients are dissolved in water and heated to obtain an aqueous phase. Aqueous phase is then added to the **oil**, preferably slowly and with constant stirring. The resulting emulsion is processed through a scrape surface heat exchanger (A-units) and then. . .

SUMM . . . such as cake flour, salt, baking powder, a protein such as milk powder, a sweetening agent such as sugar, water, **whole eggs**, or egg white, and flavor. Preferably the cake is prepared with eggs or egg yolk to obtain a maximum specific. . .

SUMM **Oil** Phase preparation: Creamtex.RTM. and emulsifiers were heated to 45.degree. C. and mixed.

SUMM Aqueous phase was added to the **oil** phase slowly, with constant stirring to obtain an emulsion.

SUMM

200	GM	Cake Flour
200	GM	**Whole Eggs** (Fresh/Frozen)
200	GM	Sugar Granulated
200	GM	Margarine/Reduced Fat Emulsion
2	GM	Double Acting Baking Soda

DETD EC-25.RTM. contains 20-25% monoglyceride, 34-38% **propylene glycol** monoester, 3% lecithin and the balance of triglycerides. Thus, the total emulsifier content of EC-25.RTM. is 57-66%. Thus, the emulsifier. . .

DETD 35% Fat (Water-in-**Oil** and **Oil**-in-water)

DETD . . . the processing (rotating) of Shortening B, depending upon the cooling process and crystallizer speed, two types of emulsions were obtained: water-in-**oil** or **oil**-in-water. Both emulsions were collected and evaluated for pound cake making. Both emulsions made acceptable cakes but the **oil**-in-water emulsion gave a moist tasting cake, which stayed moist even after one day.

DETD . . . grain character. Overall the cake prepared with Shortening B was much better than the cake prepared with Shortening A. Also, **oil**-in-water emulsion gave better results.

DETD TABLE 1

CONTROL MARGARINE AND 35% FAT EMULSION FORMULATION

	Control Margarine	Shortening A	Shortening B
Ingredients	Percentages		

	Percentages	Percentages
Oil Phase:		
CREAMTEX .RTM. 79.50	31.00	15.00
Mono Di 1892 .RTM. 0.10	1.00	--
Flake Mono Di .RTM.	1.00	--
Lecithin 0.40	2.00	--

EC-25 .RTM.. . .

DETD 25% Fat (**Oil** in Water)

DETD The 25% fat (**oil**-in-water) shortening substitute was prepared as described above. The formula is listed in Table 2 as Shortening C. In order to. . .

DETD TABLE 2

25% AND 20%
FAT CONTAINING EMULSION FORMULATIONS

Ingredients	Shortening C Percentages	Shortening D Percentages	Shortening E Percentages
Oil Phase:	25.00	20.00	20.00
CREAMTEX .RTM. 12.50	10.00	10.00	
EC-25 .RTM. 12.50	10.00	10.00	
Water Phase: 75.00	80.00	80.00	
Paselli SA2 .RTM. 12.50	16.00	--	
N-**oil** instant --	--	16.00	
HFCS	24.75	26.40	26.40
Salt	1.50	1.6	1.60
Citric Acid	0.04	0.04	0.04
Potassium Sorbate	0.13	0.13	0.13
Water	36.00	36.00	36.00
Flavors:			
Vanilla. . .			

DETD 20% Fat (**Oil** in Water)

DETD Paselli-SA2.RTM., N-**oil**.RTM. and N-**oil** Instant.RTM. were evaluated in making shortenings of formula D and eventually baking the cakes with it. The cakes made by. . . three samples were very similar in terms of volume and grain but the eating quality of the cake made with N-**oil** Instant.RTM. was much better.

DETD Using N-**oil** Instant.RTM. for making 20% fat shortening substitute resulted in the best overall product. The formula with N-**oil** Instant.RTM. is listed in Table 2 as Shortening E. Shortening E contained 5.7-6.6% total emulsifier.

DETD TABLE 3

Emulsions I	II	III	IV	V	VI

Creamtex .RTM.
10.00 10.00 10.00 10.00 5.00
EC-25 .RTM.
10.00 10.00 10.00 10.00 7.00 5.00
N-**oil** 16.00 18.00 16.00 16.00 18.60 18.00
instant .RTM.
Lo-Dex 10 .RTM.
17.50 20.30
Lo-Dex 15 .RTM. 18.00
Lo-Dex 36 .RTM. 19.00
Glycerol 10.00
Litesse .RTM. 19.80. . .

DETD Creamtex.RTM.: Partially hydrogenated soybean and cottonseed **oil** manufactured by VDBF, Joliet.

DETD EC-25.RTM.: An emulsifier concentrate consisting of **Propylene Glycol** Monoester (PGME) 34-38% Alpha Monoglyceride 20-25% Lecithin Manufactured by VDBF, Joliet

DETD N-**oil**.RTM.: Tapioca starch manufactured by National Starch Co.

DETD N-**oil** Instant.RTM.: Pregelatinized tapioca starch manufactured by National Starch Co.

CLM What is claimed is:

. . . by weight of the emulsion, of an emulsifier, the emulsifier comprising at least 45%, by weight of the emulsifier, of **propylene glycol** monoester of fats and fatty acids; and from about 60% to about 90% of an aqueous phase comprising (c) from.

. . gum, and mixtures thereof; and (d) from about 10% to about 50%, by weight of the emulsion, of a polyol **humectant**.

2. The emulsion of claim 1 wherein the emulsion is an **oil** -in-water emulsion.

4. The emulsion of claim 1 wherein the emulsifier contains 30-45% alpha monoglyceride and 45-70% **propylene glycol** monoester, by weight of the emulsifier.

10. The emulsion of claim 1 wherein the emulsifier is a mixture of **propylene glycol** monoester of fats and fatty acids, mono- and diglycerides and lecithin.

12. The emulsion of claim 1 wherein the **humectant** is selected from the group consisting of hydrolyzed corn starches.

13. The emulsion of claim 1 wherein the **humectant** is high fructose corn syrup.

AB An emulsion for use as a shortening substitute is disclosed to contain from about 10% to about 40% of a fat phase containing a triglyceride and emulsifier containing **propylene glycol** monoester of fats and fatty acids; from about 60% to about 90% of an aqueous phase containing 5% to about 30% of a viscosifier and 10% to 50% of a polyol **humectant**. The viscosifier may include a starch, a starch derivative, or a gum. This plastic emulsion is used to make a reduced fat shortening substitute in bakery products.

=>

L18 ANSWER 25 OF 92 USPATFULL
PI US 5626901 19970506 <--
SUMM In general, salad dressing is an emulsified semisolid food prepared from
vegetable **oil**(s), an acidifying ingredient of vinegar or diluted vinegar optionally mixed with citrus juice such as from lemon or
lime, a. . . starchy paste, and an egg yolk containing ingredient such as liquid egg yolks, frozen egg yolks, dried egg yolks, liquid **whole eggs**, frozen **whole eggs**,
dried **whole eggs**, or any of the above mentioned ingredients with liquid egg white or frozen egg white. Many other optional ingredients can. . . a color simulating the color imparted by egg yolk. Salad dressing contains not less than 30% by weight of vegetable **oil** and not less egg containing ingredient than is equivalent in egg solids content to 4% by weight of liquid egg. . .
SUMM Salad dressing, and salad dressing-like dressings typically contain high
amounts of fat in the form of vegetable **oil**(s). Most recently, an increased interest has been shown in **oil**-free salad dressing, or what is referred to in the art as pourable dressings. In order to meet the claim of. . .
SUMM . . . agar, gelatin, pectin, and/or carrageenan can replace a part of
the normally present triglycerides in mayonnaise or salad dressing. The **oil** phase must contain an emulsifier.
SUMM Another approach of making low fat salad dressing is disclosed in European Patent Publication no. 558,113 which discloses an **oil**-in-water spoonable emulsion with an aqueous phase containing microgels with a mean equivalent diameter of less than 100 microns. The aqueous. . .
SUMM . . . making no or low fat salad dressing is disclosed in U.S. Pat. No. 5,324,531 which discloses a no or low **oil** salad dressing using nonspheroidally shaped carbohydrate gel particles having particular size dimensions. The fat substitute is prepared by making a. . .
SUMM . . . from 0 to 35% with a pH in the range of 4.8 to 3.1. Salad dressing by definition is an **oil**-in-water emulsion; when the **oil** level of the system is decreased, the viscosity also decreases. In order to counteract this loss of viscosity, stabilizers have. . .
SUMM . . . fat salad dressing is taking place with emulsifying equipment. The primary reason for emulsification is to insure a uniform size **oil** droplet in the water phase. Therefore, no fat products can be produced without emulsifying equipment.
SUMM . . . with which the LMA pectin could be mixed, include starch, modified starch, locust bean gum, guar gum, gelatin, xanthan gum, **propylene glycol** alginate, karaya gum,
microcrystalline cellulose, carboxymethylcellulose (CMC), methyl cellulose derivatives, gum arabic, gum ghatti, gum karaya, gum tragacant, furcellaran, curdian,. . .
SUMM In accordance with the present invention, egg yolk containing ingredients such as liquid egg yolks, liquid **whole eggs**, frozen **whole eggs**, dried **whole eggs**, or any one or more of the foregoing ingredients listed above with liquid egg white or frozen egg white, can. . .
SUMM . . . also be used together with LMA pectin to make an excellent salad dressing. The dairy products can be buttermilk, cultured **cream** and different milk proteins.
SUMM The edible fat or **oil** used in the present invention, when

desired, may be corn **oil**, soy bean **oil**, cottonseed **oil**, **sunflower oil**, rape seed **oil**, and the like.

SUMM . . . to insure a good solution of the gum system. The aqueous gum phase can now either be mixed with the **oil** phase and the acid and then be emulsified or the aqueous gum phase can be mixed with an **oil** plus acid phase which might be emulsified in advance.

SUMM 0-30% of dairy products (e.g., milk, buttermilk, cultures, natural **cream** or cultured milk),

SUMM 0-35% of **oil** or fat,

DETD . . . 10

A	Sugar	4	4
B	Salt	1.2	1.2
B	Sodium Benzoate	0.1	0.1
B	CaCl.sub.2	0.05	0.05
B	Vinegar	10	10
B	Water	5	5
B	**Oil**	5	5
B	Xanthan	0.2	0.2
	Viscosity (1000 cps)		
		1.5	9.0 .+-. 1
	Yield Stress	0	9
	G' (Pa)	4	110

. . .

DETD . . . 5 5

A	Sugar	4	4
A	Salt	1	1
B	Vinegar	4	4
B	Water	21	21
B	Starch (Ultra Tex 4)		
		0.6	0.6
B	**Oil**	30	30
B	Xanthan	0.25	0.25
B	Buttermilk	15	15
	Viscosity (1000 cps)		
		3.4	7.4

---

*Marketed by National Starch

CLM What is claimed is:

. . . composition of claim 28 wherein the at least one other hydrocolloid is selected from the group consisting of agar, alginate, **propylene glycol**, alginate, high methoxyl pectin, low methoxyl conventional pectin, carrageenan, gellan gum, starch, modified starch, xanthan gum, locust bean gum, karaya. . .

35. The composition of claim 30 wherein the dairy products are selected from milk, buttermilk, cultured **cream**, natural **cream** or cultured milk.

. . . is present selected from the group consisting of protein, other stabilizer, seasoning, carbohydrate, dairy products, edible acid, coloring, flavoring, and **oil**.

AB A no and low fat salad dressing composition includes a continuous aqueous phase containing a semi-gelled pourable system comprising an amidated galacturonic acid methyl ester with a degree of esterification below 55% (LMA pectin) to replace part or all of the fat in order to make a salad dressing that has organoleptic characteristics that imitiate real salad dressing.

L18 ANSWER 26 OF 92 USPATFULL
TI **Oil**-coated microparticulated gellan gum
PI US 5516543 19960514 <--
AB The invention is **oil**-coated microparticulated gellan gum microparticles which are useful as a fat replacer, as an encapsulant and/or as a delivery system for. . .
SUMM . . . extended shelf life, and improved mouthfeel, of salad dressings, sauces and gravies, UHT milk, syrups, chocolate and malted drinks, flavor **oil** emulsions, high-butterfat dairy products, **creams**, yogurts, fillings, and icings.
SUMM The invention is **oil**-coated microparticulated gellan gum microparticles which are useful as fat replacers, as encapsulants and/or as delivery systems for food ingredients in. . .
DRWD FIG. 1 is a process flow diagram illustrating the procedure for making **oil**-coated microparticulated gellan gum.
DETD The present invention includes a composition comprising substantially spherical **oil**-coated gellan gum microparticles having particle size diameters between about 0.1-10 microns. Preferably, the composition comprises between about 70-80% of the **oil**-coated gellan gum microparticles having particle size diameters between about 0.1-5.0 microns.
DETD In another embodiment of the invention, the **oil**-coated gellan gum microparticles have one or more surface functional materials adhering to the **oil** coat. Preferably, these surface functional materials are selected from the group consisting of xanthan gum, **propylene glycol** alginate, and proteinaceous materials. More preferably, xanthan gum and **propylene glycol** alginate are used in combination as the surface functional materials.
DETD The invention further comprises low-fat food products comprising about 5-25% **oil**-coated gellan gum microparticles, preferably about 10-15% **oil**-coated gellan gum microparticles.
DETD The invention further comprises low-fat food products comprising about 5-25% **oil**-coated gellan gum microparticles, having one or more surface functional materials adhering to the **oil** coat, preferably about 10-15 % **oil**-coated gellan gum microparticles, having one or more surface functional materials adhering to the **oil** coat.
DETD The invention further comprises a process for preparing **oil**-coated gellan gum microparticles comprising:
DETD a) simultaneously introducing **oil** and gellan gum solution into a microfluidizer operated at a pressure between about 8,000 and 10,000 psi.;
DETD b) forming gellan gum microparticulates and coating the gellan gum microparticulates with **oil**; and
DETD c) removing excess **oil**. The invention also comprises the product produced by the process described above.
DETD The invention further comprises a process for preparing **oil**-coated gellan gum microparticles, having one or more surface functional materials adhering to the **oil** coat, comprising:
DETD a) simultaneously introducing **oil** and gellan gum solution into a microfluidizer operated at a pressure between about 8,000 and 10,000 psi.;
DETD b) forming gellan gum microparticulates and coating the gellan gum microparticulates with **oil** to form an **oil**-coated microparticulated gellan gum composition;
DETD c) removing excess **oil**; and

DETD d) applying a surface functional material to the **oil** coating by blending **oil**-coated microparticulated gellan gum with the surface functional material,

DETD Microparticles of the present invention are spherical globules of gellan gum surrounded with an **oil** coating. The microparticles are useful as fat extenders or fat replacers in foods which normally contain fat and/or **oil**, either partially or completely replacing the fat or **oil** normally present in the food product. Optionally, surface functional materials are contacted with the hydrophobic **oil** coat, forming another layer which modifies the properties of the microparticles to facilitate incorporation of the microparticle into certain food. . .

DETD In the following description, **oil**-coated microparticulated gellan gum is abbreviated "MPG." MPG which is modified with a surface functional material is abbreviated to indicate the. . . functional material present (e.g., MPG modified with KELTROL.RTM. SF xanthan gum is referred to below as MPG:SF; MPG modified with **propylene glycol** alginate is referred to below as MPG:PGA, etc.)

DETD Any conventional edible **oil** can be used to prepare the microparticles of the present invention, including canola **oil**, soybean **oil**, corn **oil**, coconut **oil**, cottonseed **oil**, olive **oil**, palm **oil**, peanut **oil**, rapeseed **oil**, **safflower oil**, sesame **oil**, and **sunflower oil**. Edible fats having relatively high melting points, such as highly unsaturated fats, can be used instead of or in addition to edible **oil** for coating the gellan gum globule.

DETD Suitable alginates include **propylene glycol** alginates, which are water-soluble, hydrophilic colloids typically used as secondary emulsifiers to thicken and stabilize food and pharmaceutical systems. For. . . depending on type and concentration.

These alginates combine emulsifying and thickening properties to provide excellent emulsion stability with good body. **Propylene glycol** alginates are useful in acidic solutions, since they are soluble and stable in solutions of pH 3.0 to 6.0. Specific food applications include syrups, sauces, icings, frozen foods, salad dressings, relish, batters, citrus concentrates and food emulsions. **Propylene glycol** alginates are commercially available from Kelco, Division of Merck & Co., Inc., San Diego, Calif., under product names KELCOLOID.RTM.HVF, KELCOLOID.RTM.LVF,. . .

DETD The size and shape of **oil**-coated microparticulated gellan gum was measured using a high-power microscope system equipped with a micrometer grid. Most particles have a diameter. . .

DETD The **oil**-coated microparticles have a high degree of hydrophobicity. The degree of hydrophobicity can be altered by treating the **oil** coating with a surface active material as described above.

DETD . . . microparticles of the present invention are prepared using a microfluidizer (Microfluidizer.TM., commercially available from Microfluidics Corporation, Newton, Mass.) which converts **oil** and conventional commercially available gellan gum into an **oil**-coated microparticulate material having an exceptionally high degree of small particle size uniformity. In the past, microfluidizers have been

used on. . . extended shelf life, and improved mouthfeel, of salad dressings, sauces and gravies, UHT milk, syrups, chocolate and malted drinks, flavor **oil** emulsions, high-butterfat dairy products, **creams**, yogurts, fillings, and icings.

DETD Hot **oil** and hot gellan gum solution are simultaneously introduced into the microfluidizer which is operated between about 8,000 and 10,000 psi. Following formation of the gellan gum globule and the **oil**-coating around the globule, excess **oil** is removed via centrifugation. The excess **oil** can be recycled into the microfluidizer. The **oil**-coated gellan gum globules may then be used as a fat extender or fat replacer, preferably as a fat extender.

DETD The **oil** coated globules can be further treated to modify the properties of the surrounding coating, by applying to the **oil** coating a surface functional material via conventional blending techniques. The resulting blend may be used as a fat extender or. . .

DETD . . . can advantageously exploit the fat substitute characteristics of microparticulated gellan gum include, but are not limited to, milk products, ice **cream**, pudding, cheese, cheesecake, chocolate, fondues, dips, salad dressings, mousse, frosting and icing, confections, sauces and gravies, desserts, and mayonnaise.

DETD . . . often up to 0.1 or 0.2 mm in diameter. The very small diameter and relatively uniform size distribution of the **oil**-coated microparticulated gellan gum of the present invention confer particular advantages in respect of the transport of nutrient materials and gases,. . .

DETD

	WT. %
KELCOGEL solution	
KELCOGEL F	2.5
Calcium chloride dehydrate (0.3M soln.)	2.0
Sodium benzoate	0.1
Deionized water	95.4
	100.0
Oil solution	
Corn **oil**	99.50
Span 60 emulsifier	0.50
	100.0

DETD **Oil** was placed in a hot cup and heated to 60.degree. C. under low shear. Emulsifier was added and mixing continued. . .

DETD . . . pressure was maintained between about 8,000 and 10,000 psi. Pump speed was set at 1.25 or 1.5. KELCOGEL solution and **Oil** solution were added simultaneously. Gellan gum globules were formed and coated with **oil** introduced by the **Oil** solution.

DETD The **oil**-coated microparticles were refrigerated to allow excess **oil** to separate. **Oil** was decanted, and the remaining product was centrifuged at 2,500 rpm for 6 minutes.

DETD The final product **oil**-coated microparticulated gellan gum is referred to as "MPG"

DETD 2b) KELCOLOID LVF - A 50:50 blend of KELCOLOID LVF **propylene glycol** alginate (PGA) and MPG (prepared in Example 1) was prepared by blending MPG with KELCOLOID LVF and mixing for 20-30. . .

DETD . . . 0.025

Pectin

Starch Mirathick 468

1.50
1.00 1.25 1.25 1.25
PGA (Kelcoloid LVF)
0.8 0.8 0.8 0.8 0.8
Buttermilk 30.00
30.00
30.00
30.00
30.00
Oil 1.00
1.00 1.00 1.00 1.00
Vinegar 1.60
1.60 1.60 1.60 1.60
Lactic Acid 0.18
0.18 0.18 0.18 0.18
Lemon Juice Conc.
0.19
0.19. . . 52.72
47.70
Fat Replacer
10.00
9.00 9.00 2.00 7.00
0.025
Pectin
Keltrol SF 0.50
0.50 0.50 0.50 0.50
Buttermilk 30.00
30.00
30.00
30.00
30.00
Oil 1.00
1.00 1.00 1.00 1.00
Vinegar 1.60
1.60 1.60 1.60 1.60
Lactic Acid 0.18
0.18 0.18 0.18 0.18
Lemon Juice Conc.
0.19
0.19. . .
DETD . . . with the various fat replacers. The relative scores shown below
indicate that MPG, in combination with either xanthan gum or **propylene glycol** alginate, was preferred to every other fat substitute, and was preferred to commercially available WISH-BONE salad dressing.
DETD

Ingredient	1a	1b	1c	1d	1e
Water	146.16	146.16	146.16	146.16	146.16
Velveeta Cheese	105.0	105.0	105.0	105.0	105.0
Corn **oil**	4.2	4.2	4.2	4.2	4.2
Whey Solids	27.09	27.09	27.09	27.09	27.09
Jalepenos	6.0	6.0	6.0	6.0	6.0
Salt	2.19	2.19	2.19	2.19. . .	

DETD 2. Add velveeta spread and **oil** and heat to 155 degrees F.

DETD

INGREDIENT	WT %
Water	32
Olive **Oil**	40
MPG	15
Eggs	10
Vinegar	3

DETD Water and eggs are thoroughly mixed in a food processor before adding the **oil** under maximum shear. Vinegar is then blended into the mixture under conditions of maximum shear. The mixing conditions are slowed. . .

DETD Ice **Cream** Product

DETD

Conventional	WT. %
Cream	26.4
Skimmed milk powder	4.5
Skimmed milk	52.5
Granulated sugar	12.1
Com syrup	4.0
Stabilizer & Emulsifier	0.5
	100.0

DETD The dry ingredients (i.e. sugar and skimmed milk powder) are mixed together. The liquid milk, **cream** and corn syrup are mixed together in a second container. The dry ingredients are then added to the wet mixture. . . heated to about 80.degree. C. for 30 minutes. The mixture is then homogenized by a double pass through an ice **cream** homogenizer (e.g. APV Gaulin) at 3.45 MNM.sup.-2 (500 psi) for the first pass and subsequently at 17:24 MNM.sup.-2 (2500 psi). .

DETD This process gives an ice **cream** containing about 10% milk fat.

DETD

Reduced Fat	WT. %
Cream	10.9
MPG	6.3
Skimmed milk powder	65.4
Granulated sugar	12.7
Corn syrup	4.2
Emulsifier & Stabilizer	0.5
	100.0

DETD In both examples the emulsifier and stabilizer is a proprietary food grade blend sold for the purpose of ice **cream** manufacture.

DETD

INGREDIIENT	WT. %
(Mix A)	
Cream Cbeese	45.5
MPG	25.00
Glycerin	2.5
(Mix B)	
Sucrose	23.0

Starch	2.6
Emulsifier	0.2
Cheese Cake Flavor	0.2
Salt	0.3
B-Carotene	0.01
Vanilla	0.7

DETD Example 10 is repeated except that MPG forms 30% of the mixture, with the **cream** cheese correspondingly reduced. The final product thus produced is a much lower fat cheese cake filling with the positive attributes. . .

DETD

INGREDIENT	WT. %
Whole egg	11.04
Salt	1.04
Sugar	1.43
Mustard	0.43
Vinegar	12.93
MPG	35.07
Oil	38.07

DETD . . . and stirred well to dissolve the sugar and disperse the alginate. Using a lightening mixer at speed 2000, half the **oil** is added and mixed for 3 minutes. The remaining **oil** is added and mixed at speed 1300 for 30 seconds. The remaining vinegar is added and mixed at 2000 for. . .

CLM What is claimed is:

1. A composition comprising substantially spherical **oil**-coated microparticles, wherein between about 70-80% of the microparticles have particle size diameters between about 0.1-5.0 microns, and wherein the microparticles. . .

2. A composition of claim 1 wherein the **oil**-coated gellan gum microparticles have one or more surface functional materials adhering to the **oil** coat.

. . . 3. A composition of claim 2 wherein the surface functional material is selected from the group consisting of xanthan gum, **propylene glycol** alginate, and a proteinaceous material.

5. A composition of claim 3 wherein the surface functional material is **propylene glycol** alginate.

6. A composition of claim 3 wherein the surface functional material is xanthan gum or **propylene glycol** alginate.

8. A low-fat food product comprising about 5-25% **oil**-coated gellan gum microparticles of claim 1.

9. A low-fat food product comprising about 10-15 % **oil**-coated gellan gum microparticles of claim 1.

10. A low-fat food product comprising about 5-25% **oil**-coated gellan gum microparticles, having one or more surface functional materials adhering to the **oil** coat, of claim 2.

11. A low-fat food product comprising about 10-15% **oil**-coated gellan gum microparticles, having one or more surface functional

materials adhering to the **oil** coat, of claim 2.

12. A process for preparing **oil**-coated gellan gum microparticles consisting essentially of gellan gum comprising: a) simultaneously introducing **oil** and gellan gum solution into a microfluidizer operated at a pressure between about 8,000 and 10,000 psi.; b) forming gellan gum microparticulates and coating the gellan gum microparticulates with **oil**; and c) removing excess **oil**.

13. A process for preparing **oil**-coated gellan gum microparticles, consisting essentially of gellan gum having one or more surface functional materials adhering to the **oil** coat, comprising: a) simultaneously introducing **oil** and gellan gum solution into a microfluidizer operated at a pressure between about 8,000 and 10,000 psi.; b) forming gellan gum microparticulates and coating the gelan gum microparticulates with **oil** to form an **oil**-coated microparticulated gellan gum composition; c) removing excess **oil**; and d) applying a surface functional material to the **oil** coating by blending **oil**-coated microparticulated gellan gum with the surface functional material.

AB The invention is **oil**-coated microparticulated gellan gum microparticles which are useful as a fat replacer, as an encapsulant and/or as a delivery system for food ingredients in low- or no-fat food matrix. The microparticles are substantially spherical and have particle sizes ranging between about 0.1-10 microns. Primarily, these microparticles have particle sizes ranging between 0.1-5.0 microns. The microparticles have a narrow size distribution, with about 70-80% ranging between the 0.1-5.0 micron size. The particles have a high degree of deformability and surface hydrophobicity.